**Perfect Competition Questions**

# Question 1

The market for raw beef is a perfectly competitive industry where all the firms are identical with identical cost curves. Furthermore, suppose that a representative beef supplier’s total cost is given by the equation TC = 200 + 5q2 + 2q where q is the quantity of output produced by the firm. Additionally, the market demand for beef is given by the equation P = 3000 – 6Q where Q is the market quantity and the market supply curve is given by the equation P = 200 + Q.

1. What is the equilibrium quantity and price in this market given this information?

To find the equilibrium set market demand equal to market supply: 3000 – 6Q = 200 + Q. Solving for Q, you get Q = 400. Plugging 300 back into either the market demand curve or the market supply curve you get P = 600tk.

1. The firm’s MC equation based upon its TC equation is MC = 10q + 2. Given this information and your answer in part (a), what is the firm’s profit maximizing level of production, total revenue, total cost and profit at this market equilibrium? Is this a short-run or long-run equilibrium? Explain your answer.

From part (a) you know the equilibrium market price is 600tk. You also know that the firm profit maximizes by producing that level of output where MR = MC. Since the equilibrium market price is the firm’s marginal revenue you know that MR = 600tk. Setting MR = MC gives you 600 = 10q + 2, or q = 59.8. Thus, the profit maximizing level of output for the firm is 59.8 units when the price is $400 per unit.

Using this information it is easy to find total revenue as the price times the quantity: TR = (600tk per unit)(59.8 units) = 35880tk.

Total cost is found by substituting q = 59.8 into the TC equation: TC = 18199.8tk.

Profit is the difference between TR and TC: Profit = TR – TC = 35880 – 18199.8 = 17680.2tk

Since profit is not equal to zero this cannot be a long-run equilibrium situation: it must be a short-run equilibrium situation.

1. Given your answer in part (b), what do you anticipate will happen in this market in the long-run?

Since there is a positive economic profit in the short run, there should be entry of firms in the long-run resulting in an increase in the market quantity, a decrease in the market price, and firms in the industry earning zero economic profit.